

## **THE REGIONAL INNOVATION SYSTEMS IN THE STRATEGY OF THE EUROPEAN UNION'S ECONOMIC GROWTH – EUROPE 2020**

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### **ABSTRACT**

The main aim of the paper is the presentation of the regional innovation systems in the strategy the European Union's economic growth - Europe 2020. To the particular goals of the research belong the presentation of the innovation system in the creation of competitiveness, the innovation system at the level of the region, the innovation system and innovation process, constructed advantage, the Triple Helix model, Innovation Union, Europe 2020 strategy, Horizon 2020 as the financial instrument implementing the Innovation Union. The important results of the research is the conclusion that in the innovation process also in the European Union very important are the connection between science, market (industry) and government. There is positive dependence between innovation activity and effectiveness of the innovation process. The more interaction and cooperation it can observe on the regional level than on the state. The new programme of the scientific and innovation research Europe 2020 and Innovation Union are very important factors of the strategy the European Union's economic growth.

**KEYWORDS:** Innovation System, Constructed Advantage, Innovation Union, Horizon 2020, Europe 2020

### **INTRODUCTION**

The challenges facing the EU economy continue to be daunting. In particular, several Member States' economies continue to face large deleveraging of the private and public sectors. This deleveraging reflects the unwinding of accumulated financial imbalances linked to previous unsustainable expenditure levels financed by credit, in some cases promoted by asset price bubbles in the private sector and in others by the lack of fiscal rigour in the public sector. This is now weighing on growth, as spending is reduced and income directed to debt repayment.

The deleveraging and adjustment process is inevitable and the main task of policy makers is to manage it and alleviate the associated economic and social consequences. Fiscal adjustment has to continue along the path of a differentiated growth-friendly consolidation strategy in view of the high debt levels and long-term challenges to public finances. Additionally, credibility of consolidation and its positive effects are enhanced if it is anchored in a credible medium-term fiscal framework and accompanied by reforms addressing the long-term sustainability issues stemming from an ageing population.

### **RESEARCH AND METHODOLOGY**

The main objective of the research task is to give analysis of the regional innovation systems in the strategy the European Union's economic growth Europe 2020. The particularly goals of the research belong the presentation of the innovation system in the creation of competitiveness, the innovation system at the level of the region, the innovation

system and innovation process, constructed advantage, the Triple Helix model, Innovation Union, Europe 2020 strategy, Horizon 2020 as the financial instrument implementing the Innovation Union.

The analyzed problems were solved with the use of both quantitative and qualitative research methods. The main research method applied in this analysis, was a method of scientific study used for splitting the whole (of individual items, their sets, phenomena) by means of logical abstraction. It was also used the analogy (comparative) method, which consists in finding similarities and differences between the items under study, the documentation method and statistical methods. It were applied the descriptive method, as well as methods of descriptive statistics and forecasting. Additionally, it were used the methods of deductive and inductive forecasting.

## **DISCUSSIONS**

### **Innovation System in the Creation of Competitiveness**

In the view of the new theory of economic growth developed by such researchers as Kenneth Arrow, Paul Romer and Robert Lucas, knowledge is the primary factor in determining productivity. According to the new theory of growth being the best theoretical foundation for the concept of the innovation system, the primary factor influencing the economic growth is the endogenous technical progress. In the endogenous theories workers are seen as an element capable of active interaction and creating changes in the production process, and therefore a huge role in increasing productivity is ascribed to human capital and knowledge.

It must be emphasised that the economy is not only the institutions which create it (meaning entities), but also the results of synergies, which arise as a result of mutual cooperation. Therefore, apart from the institutions that generates knowledge and innovation (companies), the research-and-development sphere or intermediaries in the transfer of innovation in the concept that sees the importance of different interactions that occur between them. The innovation system consists therefore of institutions and relations between them, thanks to which the particular economy creates an efficient mechanism for the distribution of knowledge with a view to its further processing. A significant role for the efficiency of the innovation system plays the environment, especially the consumers of innovation, who create the demand. They are important in particular nowadays in the times of the market-driven economy. Companies monitoring the tastes of consumers, create new needs through innovations.

### **Innovation System at the Level of the Region**

The research into the innovations in companies have demonstrated that there is much more interaction and cooperation among the elements of the innovation system that occurs at the level of the region than the country. This results in the emphasis in recent years to research the potential and the regional innovation systems. In response to the need and assuming greater efficiency of the actions taken nearer to the entities, most regions that possess their own local authorities creates their own policy and proinnovation strategy. The reflection of the importance of the regional level for the innovation process are the European Union programs supporting the creation of regional innovation strategies – RIS, regional initiatives for the innovation and technology transfer – RITTS, and similar national programmes as e.g. InnoRegio in Germany (Economic Bulletin, 2002).

### Innovation System and Innovation Process

The concept of the innovation system is a comprehensive look at the innovation process. Fumio Kodama points out that the existing categories of innovation and the measurements still do not cover all types of innovation. After Charles Freeman, he distinguishes, besides radical and improving innovations, other kinds of technological change (Huges and Irfan, 2008) like the change of the technological system and techno-economic paradigm. In the modern economy, the innovation can be realized by combining products and processes held by various companies from various sectors of the economy, as well as businesses and other entities, particularly from the field of research and development.

Companies and other innovation system actors can be linked in the innovation process in many ways. The basic traditional methods are the transactional links based on the market. However, the increasingly frequent are non-market links, which are manifested in the cooperation agreements concerning joint research and development and innovation activity. The cooperation between the partners in the economic process and particularly the innovative one shows increasingly popular concepts of networks and clusters and innovation systems, among both researchers and politicians (Wójnicka 2008).

An efficient innovation system introducing innovation and competitiveness of companies must have the proper linkages between science and industry. The scientific and technical policies of the countries moving towards the knowledge based economy favour the linkage between universities and industry. At the same time, the science sector should fall within the network of links with local, regional, national and foreign partners. As a result of such activity the boundaries between institutions shall disappear, and the entire system becomes more dynamic. The national policy can affect the science sector more than companies, so stronger links between science and industry can be inspired by the reform of the educational system

### Constructed Advantage

It has been suggested that the idea of absolute advantage in foreign trade originates with Adam Smith and developed by Ricardo and Torrens to comparative advantage and after was developed by Marshall and Ohlin. Foray & Freeman (1993) re-introduced it yet scarcely explored it. More attention has been devoted to it in comparison to other well-known forms of economic advantage by De la Mothe & Mallory (2003), as follows:

- **Comparative Advantage:** This idea, deriving from David Ricardo and foreign trade theory, explained economic welfare in terms of initial resource endowments traded between regions and nations. While policies were not excluded from such an analysis, they mainly added up to forms of mercantilism, and Ricardo advocated intervention regarding technological change. The overwhelming framework which government policy gave rise to and which promoted comparative advantage was *laissez-faire* (Cooke & Leydesdorff, 2006).
- **Competitive Advantage:** Thus countries with a large labour supply would naturally export goods that were labour-intensive (e.g., China), while countries that were technologically advantaged (e.g., the United States) produced and exported technologically advanced products. The paradox arose when advanced economies exported labour-intensive goods as well as technologically intensive goods. Krugman (1995) and Porter (1990, 1998) noted the competitive advantage of firms in which distributed supply chains and the role of large domestic markets became accepted. (Cooke & Leydesdorff, 2006).

- **Constructed Advantage:** The ‘new competitive advantage’ (Best, 2001) highlights regional development economics, the dynamic of which draws upon constructed advantage. This knowledge-based construction requires interfacing developments in various directions:
- **Economy:** Regionalization of economic development; “open systems” inter-firm interactions; integration of knowledge generation and commercialization; smart infrastructures; strong local and global business networks.
- **Governance:** Multi-level governance of associational and stakeholder interests; strong policy-support for innovators; enhanced budgets for research; vision-led policy leadership; global positioning of local assets.
- **Knowledge Infrastructure:** Universities, public sector research, mediating agencies, professional consultancy, etc. have to be actively involved as structural puzzle-solving capacities.
- **Community and Culture:** Cosmopolitanism; sustainability; talented human capital; creative cultural environments; social tolerance. This public factor provides a background for the dynamics in a Triple Helix of university-industry-government relations (Leydesdorff & Etzkowitz, 2003).

### The Triple Helix Model

It was Schumpeter who first recognized the importance of knowledge in the economy by his reference to ‘new combinations of knowledge’ at the heart of innovation and entrepreneurship (Schumpeter, 1911). Studies of the knowledge-based economy focus not only on human capital, but also on the sectoral characteristics of the knowledge factor (Nelson, 1982; Pavitt, 1984). An innovation system can be defined at the national level (Freeman, 1987, 1988; Lundvall, 1988, 1992; Nelson, 1993), at the regional level (Cooke, 1992; Cooke et al., 2004), or in terms of a dynamic model like the Triple Helix of university-industry-government relations (Etzkowitz & Leydesdorff, 2000; Leydesdorff, 1994).

In the Triple Helix model constructed advantages have been conceptualized as the surplus value of an overlay of relations among the three components of a knowledge-based economy: (1) the knowledge-producing sector (science), (2) the market, and (3) governments. Those places with research universities witness a growing demand for knowledge transfer to industry and, through government, to society (Etzkowitz & Leydesdorff, 1998; Etzkowitz et al., 2000). Moreover, the spread of universities is reasonably uniform in advanced industrial countries. For research knowledge, industry and government can be expected to pay more for privileged access to knowledge-based growth opportunities by funding research, stimulating closer interactions among the three institutional partners, subsidizing infrastructure (e.g., incubators and science parks), and stimulating academic entrepreneurship skills and funding (Cooke & Leydesdorff, 2006).

### Innovation Union

The key driver of the problems is Europe's structural innovation gap: compared to its competitors, Europe's patenting performance is weak and it lags behind in developing new products, new processes and new services. To boost productivity and growth, it is critically important to generate breakthrough technologies and translate them into new products, processes and services. Europe has taken an early technological lead in many key technology areas, but in the face of growing competition its advantage is tenuous, and has not translated into an innovative and competitive lead.

A timely and targeted European policy is needed for bridging the "valley of death" if Europe is to remain competitive (SEC 1428 final 2011).

This key driver is underpinned by the following structural problem drivers:

- Insufficient contribution of research and innovation to tackling societal challenges
- Insufficient technological leadership and innovation capability of firms
- The need to strengthen the science base
- Insufficient cross-border coordination

The EU recognizes the urgency of the situation, and is responding with new policy strategies. It is important to underline that the Innovation Union is one of the seven flagship initiatives of the Europe 2020 strategy for a smart, sustainable and inclusive economy.

### **Europe 2020 Strategy**

The budgetary and economic policies with the Stability and Growth Pact and the Europe 2020 strategy are the basis for building a common understanding about the priorities for action at the national and EU level as the EU seeks to return to a path of sustainable growth and job creation. It must be emphasized that the EU economy is slowly starting to emerge from the deepest financial and economic crisis in decades (Krugman 2012). The omission recommends focusing on the same five priorities that were identified in last year's Survey:

- Pursuing differentiated, growth-friendly fiscal consolidation
- Restoring normal lending to the economy
- Promoting growth and competitiveness for today and tomorrow
- Tackling unemployment and the social consequences of the crisis
- Modernizing public administration

### **Horizon 2020**

It is important to underline that from 2014-2020 with a budget of over 70 billion Euro, the European Union new programme for research and innovation is part for the drive to create new growth and job. The proposed support for research and innovation under Horizon 2020 will:

- Strengthen the EU's position in science with a dedicated budget of € 24 341 million. This will provide a boost to top-level research in Europe, including the very successful European Research Council (ERC).
- Strengthen industrial leadership in innovation € 17 015 million. This includes major investment in key technologies, greater access to capital and support for SMEs.
- Provide € 30 956 million to help address major concerns shared by all Europeans such as climate change, developing sustainable transport and mobility, making renewable energy more affordable, ensuring food safety and security, or coping with the challenge of an ageing population.

It take into account some key parameters set out in the EU budget review: the need to focus on instruments with proven European added value, to develop a more results-driven approach, to leverage other public and private funding, and to design EU instruments that work together in a single strategic framework.

This Impact Assessment considers several policy options:

**Business-as-usual (BAU):** maintaining the current plurality of programmes for R&D and innovation: In this scenario, the three main existing EU sources of funding for research and innovation - FP7, the innovation-related part of the CIP, and the EIT - are simply carried forward into the next multiannual financial framework as separate instruments, and in their current formats.

**Horizon 2020 - Establishing a single strategic framework for Research and Innovation:** In this scenario, FP7, the innovation-related part of the CIP, and the EIT are fully integrated into a single unitary framework. The selection of actions and instruments is driven by policy objectives and not by instruments. Horizon 2020 also integrates a major simplification and standardisation of funding schemes and implementing modalities across all areas. Bring to an end EU level R&D financing and re-nationalise R&D and innovation policies: The renationalisation option consists of discontinuing EU research and innovation programmes and of spending those funds at Member State level. A discontinuation option, which is assessed to a lesser extent, consists of discontinuing EU research and innovation programmes and not spending those funds at Member State level (SEC 1428 final 2011).

Intersting is to indicated how the options were compared. The four policy options were compared along a range of key parameters relevant to assessing public intervention in research and innovation:

- Clarity of focus of the intervention
- Quality of the intervention logic
- Extent to which the intervention achieves critical mass at both programme and project level
- Extent of flexibility associated with the intervention
- Extent to which it promotes excellence
- Accessibility and reach
- Degree of stakeholder support
- Impact on SMEs
- Extent to which the intervention promotes knowledge triangle and broader horizontal policy coordination
- Impacts of the intervention – structuring, leverage, innovation, economic and competitiveness, social, environmental, and EU policy impacts
- Cost-effectiveness

## RESULTS

What indicates the importance and innovativeness of the research is the presentation of the strategy the European Union's economic growth - Europe 2020. According to the new theory of growth being the best theoretical foundation for

the concept of the innovation system, the primary factor influencing the economic growth is the endogenous technical progress. In the endogenous theories workers are seen as an element capable of active interaction and creating changes in the production process, and therefore a huge role in increasing productivity is ascribed to human capital and knowledge.

The research into the innovations in companies demonstrate that there is much more interaction and cooperation among the elements of the innovation system that occurs at the level of the region than the country. This results in the emphasis in recent years to research the potential and the regional innovation systems. In response to the need and assuming greater efficiency of the actions taken nearer to the entities, most regions that possess their own local authorities creates their own policy and proinnovation strategy. An efficient innovation system introducing innovation and competitiveness of companies must have the proper linkages between science, industry and governance

Horizon 2020 maximises cost-effectiveness. On the cost side, its far reaching integration, simplification and harmonisation reduce costs for the Commission and for applicants. At the same time, the Horizon 2020 option maximises the benefits through a close integration of research, innovation and training. This provides the best approach for ensuring that investments made at EU level.

## CONCLUSIONS

It must be emphasized that structural reforms are necessary to facilitate adjustment and improve the framework conditions for European Union growth. The important of the research is the conclusion that there is positive dependence between innovation activity in innovation system and effectiveness of the innovation process. The more interaction and cooperation it can observe on the regional level than on the state. The new programmes of the scientific and innovation research Europe 2020 and Innovation Union with the financial instrument Horizon 2020 are very important factors of the strategy the European Union's economic growth and creation new job.

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